

Appln. No. 10/816,095
Amendment dated March 27, 2007
Reply to Office Action of October 12, 2006

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The listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims:

Claim 1. (currently amended) A method of controlling target living species with an active control ingredient over an extended period of time, which comprises the steps of:

- (a) liquefying solid active control agent;
- (b) providing a clay that is intercalated with an ammonium ion chemical having 6 or more carbon atoms ;
- (c) loading said intercalated nanoclay with said liquefied active control agent in the substantial absence of added aqueous and organic solvent; and
- (d) forming said loaded nanoclay into a barrier for control of said target living species.

Claim 2. (original) The method of claim 1, further comprising loading a liquefied polymer with said loaded intercalated nanoclay, said polymer recalcitrant to release of said control ingredient; and forming said loaded liquefied polymer into polymer particulates, which are formed into said barrier.

Claim 3. (original) The method of claim 2, further comprising adding said loaded intercalated nanoclay into a forming polymer, which is formed into said barrier.

Claim 4. (original) The method of claim 1, wherein said intercalated nanoclay has a moisture content of less than 4%.

Claim 5. (original) The method of claim 1, wherein said loaded nanoclay is exfoliated into particulates having an aspect ratio of between about 10:1 and about 1500:1, and a thin dimension of between about 0.1 nm and 10 nm.

Claim 6. (original) The method of claim 1, wherein said target living species is one or more of plants, animals, fungi, bacteria, viruses, insects, fish, or mollusk.

Claim 7. (original) The method of claim 1, wherein said active control ingredient is one or more of a chemical agent or a biological agent, which one or more of repels, attracts, kills, or exerts a desired action on said target living species.

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Claim 8. (original) The method of claim 1, wherein said nanoclay is derived by intercalation of one or more of a smectite, a vermiculite, or illite.

Claim 9. (original) The method of claim 8, wherein said nanoclay is derived by intercalation of one or more of montmorillonite, beidellite, nontronite, saponite, saucanite, or bentonite.

Claim 10. (original) The method of claim 1, wherein said target living species comprises a pest species.

Claim 11. (original) The method of claim 10, wherein said pest species comprises one or more of microbes, fungi, algae, bacteria, viruses, spores, insects, birds, sea animals land animals, or rodents.

Claim 12. (original) The method of claim 1, wherein said active control ingredient comprises one or more of an insecticide or a molluscide.

Cancel claim 13.

Claim 14. (previously presented) The method of claim 2, wherein said polymer is one or more of polyurethane, polyethylene, polypropylene, polybutenes, natural rubber, polyisoprene, polyesters, styrene butadiene rubber, EPDM, polyacrylates, polymethacrylates, polyethylene terephthalate, polypropylene terephthalate, nylon 6, nylon 66, polylactic acid, polyhydroxy butyrate, polycarbonate, epoxy resins, or unsaturated polyester resins.

Claim 15. (original) The method of claim 10, wherein said active control ingredient is one or more of pyrethrins, isofenphos, fenvalerate, cypermethrin, permethrin, bifenthrin, endosulfan, organophosphate type insecticides, skunk oils, and extracts of pepper.

Claim 16. (cancelled)

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Claim 17. (original) The method of claim 10, wherein said target living species comprises one or more of termites, ants, fire ants, roaches, mosquitoes, coffee berry borers, boring wasps, deer, squirrels, mice, rats, clams, oysters, or mussels.

Claim 18. (original) The method of claim 1, wherein said loading in step (b) is without use of water or organic solvents, and wherein said loaded nanoclay comprises intercalated, tactoid, and exfoliated clay species.

Claim 19. (original) The method of claim 1, wherein the ammonium salt is one or more of protonated octadecyl amine, methyl tallow bis (2-hydroxyethyl) ammonium salt, or dimethyl dialkyl [C₁₄-C₁₈] ammonium salt.

Claim 20. (original) The method of claim 2, wherein said recalcitrant polymer is one or more of polyurethane polymer, polyethylene, polypropylene, polybutenes, natural rubber, polyisoprene, polyesters, styrene butadiene rubber, EPDM, polyacrylates, polymethacrylates, polyethylene terephthalate, polypropylene terephthalate, nylon 6, nylon 66, polylactic acid, polyhydroxy butyrate, polycarbonate, epoxy resins, or unsaturated polyester resins.

Claims 21-38 (cancelled)

Claim 39. (previously presented) A method of controlling target living species with an active control ingredient over an extended period of time, which comprises the steps of:

- (a) liquefying solid active control agent;
- (b) loading in the ~~substantial~~ absence of added aqueous and organic solvent an intercalated nanoclay retaining an ammonium ion chemical having 6 or more carbon atoms with said liquefied active control agent;
- (c) loading a liquefied polymer with said loaded intercalated nanoclay, said polymer recalcitrant to release of said control ingredient;
- (d) forming said loaded liquefied polymer into polymer particulates; and
- (e) forming said polymer particulates into a barrier for control of said target living species.

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Claim 40. (currently amended) A method of controlling target living species with an active control ingredient over an extended period of time, which comprises the steps of:

- (a) liquefying solid active control agent;
- (b) loading in the ~~substantial~~ absence of added aqueous and organic solvent an intercalated nanoclay retaining an ammonium ion chemical having 6 or more carbon atoms with said liquefied active control agent, said intercalated nanoclay having a moisture content of less than 4%; and
- (c) forming said loaded nanoclay into a barrier for control of said target living species.

Claim 41. (previously presented) The method of claim 1, wherein said clay is a combination of tactoid, intercalated, and exfoliated clays.